

parative lengths of the internodes are not so uniform as in the case of the pines, there being some instances in which the longer internode falls in the year 1911, instead of the shorter. The reason for these exceptions is not clear; they may possibly be due to local variations in the soil moisture. The totals and the averages, however, show the same relations to one another as in the case of the pines. The figures are given in Table IV.

It is evident of course that the influence of the preceding season is not limited to the retardation of height growth during the year immediately following, but that the shorter twigs must involve the production of a lesser leaf area than usual, which must in turn be reflected in the amount of reserve products accumulated. Here, however, the problem becomes complicated, and the lessened leaf area on the last shoot may in a measure be compensated by the greater illumination of the older leaves, by this fact made possible. The figures for 1912 as compared with those for 1913 in Table I would seem to indicate the holding over effect as here suggested, though the same does not appear to be true of the Douglas fir. It is also evident that trees of different species on the same areas are not equally responsive to the variations of soil moisture in the manner indicated, a fact which probably is due chiefly to a difference in the degree of tolerance though to some extent to other specific peculiarities.

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## A NEW SOUTHWESTERN SEDGE

BY KENNETH K. MACKENZIE

Since writing the article on *Carex* for the Illustrated Flora two species have been found by Mr. E. J. Palmer in southwestern Missouri not included therein. One is *Carex arkansana* Bailey, heretofore known from Arkansas and Oklahoma. The other is an undescribed species bearing a remarkable outward resemblance to the European *Carex vulpina* L., and in technical characters intermediate between that species and our own *Carex stipata* Muhl. It is represented in the collections at the New York Botanical Garden by several specimens, and seems first to have

been collected by Bigelow in 1853-4 in the Whipple Expedition from "Fort Smith to the Rio Grande." Elihu Hall secured it on June 6, 1872, in swamps at Hempstead, Texas (No. 734); and B. F. Bush collected excellent specimens (No. 993) at Catale, Indian Territory, now Oklahoma, on May 22, 1895. These specimens in the Columbia University herbarium have been taken as the type. Mr. Palmer's specimens (No. 3405) were collected on May 21, 1911, in wet sandy soil near Jasper, Missouri, and were distributed as *Carex conjuncta* Boott. The other specimens referred to were all distributed as *Carex stipata* Muhl.

A detailed description of this species follows, which may be known as

***Carex Oklahomensis*, sp. nov.**

Culms cespitose, 3.5-8 dm. high, 4-6 mm. wide at base, 1.5 mm. beneath head, slender but stiff, sharply triangular, rough above, not wing-angled or strongly flattened in drying, exceeding leaves, aphyllopodic, brownish at base, the rootstocks fibrillose. Leaves with well-developed blades 3-4 to a culm, the blades flat, thickish, 2.5-5 mm. wide, up to 4 dm. long, serrulate on margins towards apex as well as roughened on veins, the sheaths tight, strongly green and white mottled dorsally but not conspicuously septate nodulose, ventrally white-hyaline not red-dotted or cross-rugulose, thin, and soon ruptured, exceeding base of blade. Head 4-7 cm. long, about 15 mm. wide, oblong-cylindric, with numerous spikes, continuous or somewhat interrupted below, the basal branches compound, appressed, sessile or short-peduncled, the upper simple, closely aggregated and scarcely distinguishable; lower one or two bracts prolonged, setaceous, the others scale-like. Spikes androgynous, subglobose, 5-8 mm. long, nearly as wide, with some 6-12 appressed-ascending perigynia and inconspicuous staminate flowers. Scales ovate or lance-ovate, as wide as but shorter than perigynia, chestnut brown tinged with hyaline margins and prominent midvein excurrent as a cusp. Perigynia lance-ovate, 4-5 mm. long, 1.75 mm. wide, plano-convex, thick, the walls thin, spongy and sub-turgid at base, green or in age greenish-straw-colored but not brownish, dorsally conspicuously 7-10 nerved, ventrally less conspicuously fewer nerved, sharp-edged to the truncate sub-cordate base, stipitate, tapering to a serrulate deeply bidentate beak shorter than body, at apex reddish-brown tinged, and with a suture on the outer side. Achenes lenticular, yellow, stipitate,

ovate-orbicular, 1.75 mm. long, 1.5 wide, apiculate, jointed with style, the latter thickened at base. Stigmas two.

From its American allies this species may be distinguished by the combination of wingless culms, erugulose white and green mottled sheaths, and beak of perigynium not exceeding body. It is to be referred to the group *STENORHYNCHAE* Holm.

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### SHORTER NOTES

TRI- AND TETRACARPELLARY WALNUTS.—In *TORREYA*, June, 1913, the writer published a short note on "A Tetracarpellary Walnut." Recently he has had an opportunity to examine a series of 106 abnormal walnuts, all from the grove in Santa Ana, California, referred to in the first note. Of these 106 walnuts, 89 were tricarpellary, 45 being symmetrical and 44 unsymmetrical. The remaining 17 were tetracarpellary, 7 being symmetrical and 10 unsymmetrical. The statement as to symmetry is as viewed from the pointed end; a few of these specimens were incomplete, that is, the grooving of the shell did not extend entirely around to the back of the shell. It was not found possible to connect the production of these malformed walnuts with any particular tree or trees in the grove.

If this case be taken as typical, it would appear that the tendency toward the production of the tricarpellary type is greater than that toward the tetracarpellary type, and that approximately one half of the specimens are symmetrical or nearly so, in both types.

I am indebted to Prof. R. C. Shuey, of the University of Pittsburgh, for these specimens.

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